REINDEER HERDERS, GIS AND LAND USE PLANNING

The Challenge

The livelihood of the indigenous Sami people of northern Sweden is based on a 1 000-year-old tradition of reindeer husbandry and hunting of wild reindeer. Reindeer herding is an exclusive right of the Sami and is a very important economic and cultural activity. Many of the reindeer migration routes (between winter and summer pastures) have been used for hundreds of years and constitute a patrimonial and historical legacy. Recently however, herders have had to change the routes in response to new developments (highways, railroads, mining, hydro and wind power as well as forestry activities).

Vilhelmina Model Forest

Established: 2004 | Area: 850 000 ha

Facts

- In Sweden, there are about 25 000 Indigenous Sami people of which 4 700 own reindeer and 3 000 that rely on reindeer herding for their living.
- 55% of Sweden's total land area is defined as reindeer husbandry area.
- About 50% of the total forest area in Sweden and about 40% of the standing forest volume is found within the reindeer husbandry area.
- For a family to live solely on reindeer herding, they must own at least 400 reindeer.
- The Model Forest encompasses parts of two reindeer herding communities – Vilhelmina North and Vilhelmina South – that together cover almost 30 000 km^2.

While the Sami are guaranteed access to land for reindeer grazing, in many instances the forest companies are the main owners[1] of the forested areas. Forestry is an important Swedish export industry and source of employment. The overlapping property and land use regimes has lead to conflicts since both groups can have adverse effects on the other. For example, forestry, through logging and soil scarification, can damage the lichen reindeer graze on. Conversely, and although minor compared to moose, reindeer can trample seedlings and break shoots or branches when digging in the snow to find lichen.

Finding a solution

The Vilhelmina Model Forest provides an opportunity for stakeholders to share results and lessons learned and improve existing governance at the landscape level. This helps stakeholders understand and address natural resource management conflicts. Through the Model Forest, the Swedish Forest Agency, researchers and the reindeer herders initiated a process of developing reindeer husbandry plans using participatory GIS (pGIS). pGIS is a tool which involves mapping indigenous ecological knowledge combined with other data sources on a geographic information system (GIS). The goal was to provide clear and understandable information about habitat use and movement of reindeer across the landscape. With the pGIS, land users can more effectively participate in planning processes by inputting their current uses and concerns on digital maps. The pGIS facilitates communication, conflict resolution and helps with negotiation processes. For Anna-Maria Fjellström, Sami indigenous reindeer herder and President, Vilhelmina Model Forest, "the Model Forest is a great opportunity to network and share knowledge with other land users in the area. It motivates me because it is a good way to have a landscape perspective on a big area that is important for the husbandry I manage."

1 Other owners are small private landowners and the federal government.

Results and impact

In the Model Forest, about 35 reindeer herders participated in training on satellite image interpretation, GIS, GPS and field inventory techniques. They equipped their reindeer with GPS collars that provide their positions on web-based maps in real time. With this data, they can visualize and analyze the situation in their custom-made pGIS. Forest companies also supplied the reindeer herding community with forest harvesting plans as a map layer that could be imported into the GIS database. “We have people who never used Word or email but are now using GIS” Says Per Sandström, Researcher, Swedish University of Agriculture and Science.

Using the pGIS and through cooperation with various stakeholders, the group developed reindeer husbandry plans that have allowed reindeer herders to better plan for the sustainable use of the grazing lands during larger gatherings of the animals (when marking the calves and before migrations). Introducing pGIS to prepare and share the reindeer husbandry plans has contributed to the development of a more inclusive planning process involving women and youth. It also improved information-sharing between Sami and the forest industry through a more open and transparent planning process as well as consultations with other land users including the mining and energy sector, recreational hunters, hikers and snowmobile users. “This planning approach has now spread to 50 of the 51 Sami reindeer herding districts in Sweden” said Leif Jougda, General Manager of the Vilhelmina Model Forest.

To find out more

- International Model Forest Network: **imfn.net**
- Vilhelmina Model Forest: **modelforest.se**
- Video: **youtu.be/fEtZiNalniU**
- Sandstrom. P et al. 2012. Participatory GIS to mitigate conflicts between reindeer husbandry and forestry in Vilhelmina Model Forest, Sweden. Forestry Chronicle, 88(3): 254-260.

The International Model Forest Network brings people together to test and apply innovative approaches to the sustainable management and use of the world’s landscapes and natural resources.

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This document has been published with the support of the Government of Canada

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